"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

SUDACHENKO, V. N.

UDC 621.383.82:535.376

"Investigation of Electroluminescent Optrons with Interior Optical Feedback"

Zap. Leningr. s.-kh. in-ta (Annals of Leningrad Agricultural Institute), 1970, 118, pp 82-87 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10B214)

Translation: An optron element is described in which electroluminescent capacitors are used as controlled sources of radiation, and as radiation receivers, the FC-KO photoresistor. The operation of the optron with internal optical feedback is considered and it is shown that the optron with feedback is a device with two stable states. Practical methods are considered for matching the resistances of electroluminescent capacitors and the photoresistors, e.g., with the aid of outside preliminary irradiation. The possibility is considered of using optrons with optical feedback for the construction of trigger circuits. There are three illustrations and two references. N. S.

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1/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--CONTROL OF THE SETTING OF PHOSPHATE BINDERS -U-

AUTHOR-(02)-SUDAKAS, L.G., MIKLASHEVICH, N.V.

COUNTRY OF INFO--USSR

SOURCE--TSEMENT. 1970, (3), 18-19

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PHOSPHATE, CEMENT, CATION, BARIUM, CALCIUM, STRONTIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0809 STEP NO--UR/0101/70/000/003/0018/0019

CIRC ACCESSION NO--AP0136243

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2/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136243

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDN. OF BA, SR, AND CA CATIONS, REGARDLESS OF THEIR CONCN., ACCELERATES SETTING PROCESSES IN COMPARISON WITH PURE ACID. THE ADDN. OF OTHER CATIONS ESSENTIALLY RETARDS SETTING PROCESSES IN COMPARISON WITH PURE ACID (BASED ON MAX. CONCNS.). THE STRONGEST RETARDING ACTION IS SHOWN BY MG, CO, NI, ZN CATIONS; THIS IS RELATED WITH NATURE OF CATION AND HIGHER SOLY. OF CORRESPONDING OXIDES.

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USSR

UDC 681.332:519.2

MOROZOV, A. M., SUDAKOV, D. M., ZAKHAROV, V. M., Computing Center of the Academy of Sciences of the Georgian SSR

"A Random Number Generator"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310255, Division G, filed 20 Oct 69, published 26 Jul 71, pp 152-153

Translation: This Author's Certificate introduces a random number generator with arbitrary distribution. The device contains a module for shaping uniformly distributed random numbers connected to a number register. The outputs of the most significant digits of the number register are connected to the address outputs of a memory device. The proposed random number generator also contains an adder. As a distinguishing feature of the patent, in order to improve the accuracy of approximation to the distribution curve of the random numbers generated, the device contains multiplication units connected to the output of the memory device. The second inputs of these multipliers, except for one,

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USSR

MOROZOV, A. M., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310255, Division G, filed 20 Oct 69, published 26 Jul 71, pp 152-153

are connected to the least significant digital place outputs of the register through nonlinear contiguous digital converters, the one multiplier is connected directly to the least significant digital outputs of the register, and the outputs of all multipliers are connected to the adder.

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USSR

UDC 519.21

SUDAKOV, D. M., MOROZOV, A. M.

"Distribution of Moments in Time of First Intersection of a Rising Level by a Normal Random Process"

Tr. Vychisl. Tsentra. AN Gruz SSR [Works of Computer Center, Academy of Sciences, Georgian SSR], Vol. 9, No. 3, 1970, pp 80-86 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V92 by V. Chistyakov).

Translation: A random process is studied in which the one-dimensional distributions are normal:

$$\Phi(x)=\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{x} e^{-\frac{u^2}{2}}du. \qquad (1)$$

A heuristic conclusion is presented for the formula for the distribution function of the moment of first intersection of level $x=f(t)$ by the process. Axis t is divided into small sectors and line $x=f(t)$ is replaced by a broken line consisting of sectors parallel to the t axis and sectors parallel to the x axis. The following assumptions are made:

A) The distribution function of the moment of first intersection, calculated for the broken line, converges as the sectors are made shorter with the corresponding

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USSR

UDC 519.21

SUDAKOV, D. M., MOROZOV, A. M., Tr Vychisl. Tsentra. AN Gruz SSR, Vol. 9, No. 3, 1970, pp 80-86.

distribution function for the line $x=f(t)$.

B) The intersection of the process with sectors of a broken line parallel to the t axis and sectors parallel to the x axis are independent.

C) The number of intersections of sectors parallel to the t axis is independent and distributed according to Poisson's rule.

Discussions are presented for the cases $f(t)=kT$ and $f(t)=a-U_0e^{-\frac{t}{\tau}}$. In the case of arbitrary f(t), a formula is written immediately. No limitations on f(t) or on the random process are given except for (1).

Abstractors note. It is well known that the flow of crossings of a high, constant level is a Poisson flow. The assumption of independence and Poisson nature of the number of crossings of a finite level in neighboring intervals approaching 0 in length seems unjustified.

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1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--TITANIUM, III, CHLORIDE AS A REDUCING AGENT DURING THE PHOTOMETRIC DETERMINATION OF PHOSPHORUS AS MOLYBDOPHOSPHATE -U-

AUTHOR-(03)-SUDAKOV, F.P., GALANKINA, N.F., KHAMRAKULOVA, M.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 548-52

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TITANIUM CHLORIDE, PHOTOMETRIC ANALYSIS, PHOSPHATE, MOLYBDENUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0463 STEP NO--UR/0075/70/025/003/0548/0552

CIRC ACCESSION NO--AP0126215

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2/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126215

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 12,MOLYBDOPHOSPHATE CAN BE REDUCED IN AN ACID MEDIUM BY TICL SUB3. THE EFFECT OF VARIOUS FACTORS (CONCN. OF REACTING SUBSTANCES, ACIDITY, TEMP., TIME) WAS STUDIED. OPTIMUM CONDITIONS FOR THE REDN. ARE: BOILING FOR 10 MIN, ACIDITY OF 1.5-3.0N HCL OR 1.5-2.0N H SUB2 SO SUB4, 9.6 TIMES 10 PRIME NEGATIVE2 M MOLYBDATE CONCN., AND GREATER THAN OR EQUAL TO 7 TIMES 10 PRIME NEGATIVE3 M TICL SUB3 CONCN. A DIAGRAM OF MOLYBDOPHOSPHATE STABILITY WAS CONSTRUCTED, WHICH SHOWS THE JOINT EFFECT OF THESE FACTORS AND THE OPTIMUM ACIDITY OF THE SOLN. AT A GIVEN MOLYBDATE CONCN. AND VICE VERSA. TO DET. SMALL AMTS. OF P, TO A SOLN. CONTG. SIMILAR TO 0.025 MG P-ML, ADD 4.33 ML HCL, 8 ML 0.4M NA MOLYBDATE AND 8 ML 0.2087M TICL SUB3, BOIL FOR 10 MIN ON A WATER BATH, COOL, DIL. TO 25 ML WITH H SUB2 O, AND DET. P PHOTOMETRICALLY AT 810 NM. THE MOLAR ABSORPTIVITY AT 810 NM IS 2.9 TIMES 10 PRIME4. FACILITY: MOSCOW STATE UNIV., MOSCOW, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 543.70

SUDAKOV, F. P., OBUKHOVA, L.A., and TSENSKAYA, T.I., Moscow State University imeni M. V. Lomonosov, Moscow, Ministry of Higher and Secondary Specialized E ucation USSR

"Photometric Determination of Phosphorus by Formation of Molybdophosphates in Mixed Solutions"

Moscow, Zhurnal Analiticheskoy Khimii, Vol 25, No 4, Apr 70, pp 765-771

Abstract: Formation of 12-molybdophosphate in aqueous solutions of dimethylformamide, dioxane, acetone and ethanol, with 30-50% of the organic component, results in an appearance of a well defined UV maximum at 310-320 mμ, not found in aqueous solutions. The absorbance in mixed solutions is higher than in aqueous solutions, the molar extinction coefficient is $2.4 \cdot 10^4$ (312 mμ), $2.1 \cdot 10^4$ (310 mμ), $2.5 \cdot 10^4$ (318 mμ) and $1.8 \cdot 10^4$ (310 mμ) for molybdophosphate in dimethyl formamide, dioxane, acetone and ethanol solutions respectively. The phosphate and molybdate require a lower excess of molybdate for a quantitative reaction in mixed solutions. This reaction can be used for photometric determination of phosphorus. It is as simple as the water method, but more sensitive.

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USSR

SUDAKOV, K. V., ANTIMONIY, G. D., First Moscow Medical Institute imeni I. M. Sechenov

"Central Mechanisms of the Effect of Electromagnetic Fields"

Moscow, Uspekhi Fiziologicheskikh Nauk, Vol 4, No 2, Apr/May/Jun 73, pp 101-135

Abstract: A study was made of the presently known published data pertaining to the effect of electric magnetic fields on the central nervous system. The study included various aspects of the problem of the role of natural electromagnetic fields in the evolutionary processes and their effect on animals and man, the participation of electromagnetic fields in the activity of the central nervous system, the perception of electromagnetic fields by animate organisms, the effect of these fields on the behavior of animals and man and also the modern concepts of the neurophysiological mechanisms of the effect of electromagnetic fields. New experimental data are presented indicating the possibility of selective sensitivity of the limbic structures to the effect of electromagnetic waves. A study was made of the effect of electromagnetic fields on purposeful behavioral reactions of different biological quality from the point of view of the concept of the functional system of Academician P. K. Anokhin. Some

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USSR

SUDAKOV, K. V. and ANT'IMONIY, G. D., Uspekhi Fiziologicheskikh Nauk, Vol 4, No 2, Apr/May/Jun 73, pp 101-135

recordings are presented showing the variations in electrical activity of the cortex and subcortical formations in various stages of the effect of electromagnetic fields.

The hypothesis is stated according to which an electromagnetic field, which has a selective effect on the limbic structure of the brain, primarily disturbs the mechanisms of the formation of negative emotional states. The analogous effect of an electric current on negative emotional reactions was observed in experiments with electronarcosis by Yu. B. Abramov [Kliniko-fiziologicheskiye issledovaniya po problemam elektrosna i elektroanestezii (elektronarkoza), Moscow, Meditsina, 3-5, 1969]. The selective effect of the electromagnetic fields on the emotional reactions of a negative nature is apparently a cause of disturbance of the afferent synthesis apparatus and the acceptor of the results of the effect. The defensive functional system was disturbed in experiments involving two reactions of different biological quality. The systems approach to the study of the given problem is considered highly prospective.

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USSR

UDC 612.822.3

SUDAKOV, K. V., ZHURAVLEV, B. V., and KOTOV, A. V., Chair of Normal Physiology, First Moscow Medical Institute imeni I. M. Sechenov

"Neurophysiological Mechanisms of Sensory Satiation"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, Vol 23, Vyp 1, Jan/Feb 73, pp 24-33

Abstract: Liquid food (milk or carrot juice) was gently sprayed over the oral mucosa and, through a gastric tubing, injected into the stomach of hungry, anesthetized cats and rabbits, while EEG's were being recorded from the cerebral cortex and various hypothalamic areas. On the basis of the results obtained, the following theory was formulated. In the hungry state, the lateral hypothalamus is active and discharges impulses to the motor and sensory cortex and to the ventromedial hypothalamic nucleus, increasing the sensitivity of these structures to afferent impulses from oral and gastric receptors. When stimulated by food, these receptors discharge afferent impulses primarily to the ventromedial nucleus, whose activity thus gradually increases with the intake of food. At the same time, progressive inhibition takes place in the lateral hypothalamus and brain cortex. Eventually, excitation of the ventromedial nucleus, which functions as the satiation center, and inhibition of the lateral hypothalamus, which functions as the hunger center, create a state of sensory

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USSR

SUDAKOV, K. V., et al., Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, Vol 23, Vyp 1, Jan/Feb 73, pp 24-33

satiation which stops food intake before the food present in the gastrointestinal tract is digested, absorbed, and distributed, that is, before metabolic satiation is reached.

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USSR

UDC 612.825.1

SUDAKOV, K. V.

Biologicheskiye motivatsii (Biological Motivations), Moscow, "Meditsina," 1971, 304 pp

Translation: The book Biologicheskiye motivatsii (Biological Motivations) is devoted to the problem of the nature of such emotionally colored states of the organism as hunger, thirst, fear and sexual excitement, determining the purposeful activity of animals and man. The role of motivation in the integral adaptive reactions of the organism is demonstrated, and the modern theories and neurophysiological mechanisms of motivations and their reinforcement, role of emotions in motivation excitation, pathology and the psychopharmacology of motivations are presented.

This monograph is the first effort in the Soviet Union to present a systematic discussion of the above-indicated problems. The book is of interest not only for physiologists, psychologists and medical specialists but also for engineers dealing with bionics problems.

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USSR

SUDAKOV, K. V., Biologicheskiye motivatsii, Moscow, "Meditsina," 1971, 304 pp

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USSR

SUDAKOV, N. I., VERSHININA, N. I., DROKIN, A. I., and URSULYAK, N. D., Krasnoyarsk Institute of Nonferrous Metals imeni M. I. Kalinin, Krasnoyarsk State University

"Magnetic Anisotropy of Bismuth-Calcium-Iron-Vanadium Garnets"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 34, No 5, May 70, pp 1077-1081

Abstract: The variation of the crystallographic magnetic anisotropy constant K_1 of single crystal samples of ferrite garnets with the field and temperature was measured by the mechanical moment method. Some of the samples had an addition of gallium and aluminum ions; a list of the composition of the samples follows:

No of sample	Composition
1	$Bi_{0.12}Ca_{2.18}Fe_{4.71}V_{1.29}O_{12}$
2	$Bi_{0.24}Ca_{2.69}Fe_{4.43}V_{1.31}O_{12}$
3	$Bi_{0.[illegible]}Ca_{2.[illegible]}Fe_{4.[illegible]}V_{1.[illegible]}O_{12}$
4	$Bi_{0.[illegible]}Ca_{2.[illegible]}Fe_{4.[illegible]}V_{1.[illegible]}O_{12}$
5	$Bi_{0.[illegible]}Ca_{2.[illegible]}Fe_{4.[illegible]}V_{1.22}Al_{0.11}O_{12}$
6	$Bi_{0.[illegible]}Ca_{2.44}Fe_{4.[illegible]}V_{1.22}Al_{0.21}O_{12}$
7	$Bi_{0.[illegible]}Ca_{2.44}Fe_{4.[illegible]}V_{1.22}Al_{0.26}O_{12}$
8	$Bi_{0.[illegible]}Ca_{2.58}Fe_{4.[illegible]}V_{1.25}Ga_{0.17}O_{12}$
9	$Bi_{0.12}Ca_{2.54}Fe_{4.43}V_{1.29}Ga_{0.28}O_{12}$
10	$Bi_{0.12}Ca_{2.28}Fe_{4.[illegible]}V_{1.29}Ga_{0.52}O_{12}$

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USSR

SUDAKOV, N. I., et al, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 34, No 5, May 70, pp 1077-1081

Analysis of the curves of the mechanical moments in the (100) plane in samples of all composition showed that the curves of the moments have a clearly expressed periodicity of $\pi/2$ at room temperatures even for weak fields of 40 oersted. A change in the temperature leads to a change in the amplitude of the sine curve and a shift in the saturation fields. The addition of the diamagnetic ions Al^{3+} and Ga^{3+} produces an expressed dependence of K_1 on their content for a fixed quantity of vanadium ions: K_1 decreases with an increase in the aluminum and gallium content for all temperatures. The effect of the type of substitute ion on the anisotropy was difficult to estimate from the results of this study, since the experiments were conducted with different vanadium contents: $x = 1.22$ for the Al-substitute and $x = 1.29$ for the Ga-substitute. The following four conclusions were made: (1) K_1 for bismuth-calcium-iron-vanadium garnets is only slightly dependent on the composition. The introduction of additional diamagnetic Al^{3+} and Ga^{3+} ions considerably reduces its value. (2) The dependence $K_1(T)$ for all samples is qualitatively the same. K_1 is negative in the entire temperature interval studied and its value rises sharply with a drop in temperature. (3) The dependence of K_1 on the field for all samples is in agreement with

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SUDAKOV, N. I., et al, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 34, No 5, May 70, pp 1077-1081

theory. (4) The samples of Bi-Ca-Fe-V-garnets of basic and substitute compositions are not sensitive to heat and thermomagnetic treatments.

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1/2 017 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--CORRELATION OF LOSSES DUE TO ROTATIONAL HYSTERESIS WITH THE MAGNETIC FIELD STRENGTH IN NICKEL GERMANIUM SINGLE CRYSTALS -U-

AUTHOR-(02)-KOVRIGIN, V.I., SUDAKOV, N.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ, 1970, 13(2), 103-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--METAL SINGLE CRYSTAL, NICKEL, GERMANIUM, CRYSTAL ANISOTROPY, MAGNETIC HYSTERESIS, MAGNETIC FIELD EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/1908 STEP NO--UR/0139/70/013/002/0103/0106

CIRC ACCESSION NO--AT0114348

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2/2 017 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0114348

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LOSSES WERE STUDIED IN RELATION TO THE VALUE OF THE MAGNETIC FIELD AT ROOM TEMP. FOR NIGE SINGLE CRYSTALS AND FOR A SINGLE CRYSTAL OF PURE NI FOR COMPARISON. IN THE (100) PLANE OF THE NIGE SINGLE CRYSTALS, THE LOSSES INCREASE AS THE FIELD IS INCREASED, REACHING A MAX. AT 800-1500 OE, AND THEN THEY DECREASE, REACHING ZERO AT 2-3 KOE. THE MAX. VALUE OF THE LOSS IS GREATER, THE LOWER THE GE CONCN. THE MAX. LOSS SHIFTS TOWARD LOWER FIELDS AS THE GE CONCN. IS INCREASED. EVEN SMALL AMTS. OF GE IN NI HAVE A MARKED EFFECT ON THE ANISOTROPY CONSTS. THE CHANGE IN THE ANISOTROPY CONST. IS PROPORTIONAL TO THE SATN. MAGNETIZATION. FACILITY: KRASNOYARSK. INST. TSVET. METAL. IM. KALININA, KRASNOYARSK, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 538.23

KOVRIGIN, V. I., SUDAKOV, N. I., Krasnoyarsk Institute of Nonferrous Metals imeni M. I. Kalinin

"Study of Dependence of Rotary Hysteresis Losses on Magnitude of Magnetic Field in Nickel-Germanium Single Crystals"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 2, 1970, pp 103-106

Abstract: The article describes results of a study of rotary hysteresis losses as a function of the magnitude of the magnetic field at room temperature in single crystals of nickel-germanium alloy. A single crystal of pure nickel was also studied for comparison. As far as is known, this is the first time such studies have been made on nickel-germanium single crystals. The rotary hysteresis losses were studied by measuring the mechanical moments acting on a sample placed in a homogeneous magnetic field as it rotates forward and backward in a crystallographic plane (100). The mechanical moments were measured on a torque magnetometer, as well as by automatic photo-recording. It was found that rotary hysteresis losses increase with an increase in the field, reaching a maximum in the field, reaching a maximum in 800-1500 oe fields, then decline and reach zero value in 2000-3000 oe fields. The lower the germanium concentration of

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USSR

KOVRIGIN, V. I., SUDAKOV, N. I., Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 2, 1970, pp 103-106

the single crystal is, the higher is the maximum loss value. An increase in the germanium concentration shifts the maximum rotary hysteresis loss towards lower fields. Slight additions of germanium in nickel have a significant effect on the value of the anisotropy constant. There is a proportional relationship between variations in the anisotropy constant according to germanium content and saturation magnetization.

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USSR

UDC 532.57+532.137+536.51+532.14.08+531.787

SUDAKOV, P. YE., BITSUTA, V. K.

"Development and Investigation of a Viscosimeter for Continuous Measurement of Viscosity in a Flow"

Tr. Groznen. neft. in-t (Works of Groznenskiy Petroleum Institute), 1971, Collection 33, pp 196-197 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B1633)

Translation: The design of a capillary viscosimeter for continuous monitoring and control of the viscosity of petroleum products in a flow is described. The viscosimeter consists of a capillary with a carefully polished surface into which the oil enters from the oil pipe with the aid of a semiplunger pump providing a constant supply. The pressure is taken with the aid of a differential manometer in a measuring section of the capillary and the manometer is connected through separating vessels. The differential manometer is connected with a secondary indicator graduated in viscosity units. A temperature compensation method is proposed for measuring viscosity under industrial conditions with an error of less than ±0.4 centistoke. The method is based on continuous correction of the indicator of the secondary instrument with the aid of a measuring sylphon through expansion of the measuring material contained in the cylinder of the thermomanometer system. The cylinder is placed in the flow of the product being studied. I. G. Bulina.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC: 621.391.172

SUDAKOV, S. S.

"Theory of Signal Filtration in Arbitrary Noise"

Moscow, Radiotekhnika, Vol. 25, No. 10, 1970, pp 33-38

Abstract: The problem of signal filtration is attacked in this article by considering its physical model, which the author sees as corresponding to the general principles of the motion of dynamic systems in physics. From this point of view, the problem can be investigated through the theory of interpolation and the approximation of functions in definite functional space. The author conducts a general analysis of the problem by assuming that the signal and noise oscillations are described by functions which are elements in a functional space, and that some subspace can be extracted from the functional space through a priori information concerning the expected signal function. On this basis, he ob-

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signal base regardless of the growth in the number of discrimination elements, that the limitation in the growth of the noise immunity with increasing signal base is determined by the inherent receiver noise, and that the permissible base of the signal is determined from the specified false-alarm probability and depends strongly on the signal/noise ratio.

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USSR

MATAFONOV, R. P., SUDAKOV, V. A.

UDC 621.385.632/633

"A Method of Making SHF Electronic Devices"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, 1970, Author's Certificate No 266077, Filed 6 Oct 67, p 70

Abstract: This author's certificate introduces a method of making SHF electronic devices of the traveling wave or backward wave type. The procedure involves applying a local absorbing agent to the deceleration system and its holders, assembling the equipment and evacuation. As a distinguishing feature of the patent, the manufacturing technology is simplified by applying the local absorber after evacuation in the finished unit by thermal vaporization of the metal from a vaporizer located inside the tube, while simultaneously checking the amount of attenuation.

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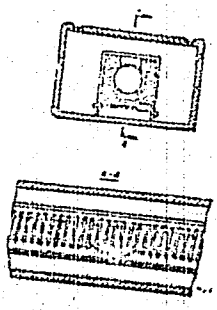
USSR

MATAFONOV, R. P., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, 1970, Author's Certificate No 266077, Filed 6 Oct 67, p 70



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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 621.385.632/633 (088.8)

MATAFONOV, R.P., SUDAKOV, V.A.

"Production Method For Microwave Electron Devices"

USSR Author's Certificate No 266077, filed 6 Oct 67, published 6 July 70 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A199P)

Translation: A production method is proposed for traveling-wave or backward-wave microwave devices which includes the application of a local absorber to the delay system and its mount, assembly of fittings, and evacuation. With the object of simplifying production technology, application of the local absorber is conducted after evacuation in the prepared device by thermal sputtering of metal from an evaporator positioned within the tube with a simultaneous check of the magnitude of attenuation.

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UNCLASSIFIED

STRUCTURE OF THE SOLID SOLUTION REGION OF AN INDIUM AND MERCURY SYSTEM -U-

PROCESSING DATE--18SEP70

AUTHOR-(02)-KOZIN, L.F., SUDAKOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--IAV. AKAD. NAUK KAZ. SSR, SER. KHIM. 1970, 20(1), 50-5

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SOLID SOLUTION, X RAY DIFFRACTION ANALYSIS, INDIUM ALLOY, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0769

STEP NO--UR/0360/70/020/001/0050/0055

CIRC ACCESSION NO--AP0104215

UNCLASSIFIED

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2/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104215

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLID SOLNS. OF THE TITLE SYSTEM WERE STUDIED BY X RAY STRUCTURAL ANAL. AND BY DETG. THEIR HARDNESS. WITHIN THIS SYSTEM WERE FORMED A WIDE RANGE OF SOLID SOLNS. WITH SMALLER THAN OR EQUAL TO 94 AT. PERCENT IN. AT 94 AT. PERCENT IN, THE LATTICE WAS THAT OF IN. AT 84-92.5 AT. PERCENT IN, THE LATTICE WAS FCC. THE PARAMETER OF THE FCC. PHASE WAS A EQUALS 4.675 ANGSTROM.

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USSR

SUDAKOV, V. N.

"A Continuous Analoque of the Birkhoff-Neuman Theorem"

Teoriya Igr [Games Theory -- Collection of Works], Yerevan, 1973, p 297 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V449)

Translation: An analoque of the Birkhoff-Neuman theorem is proven for an important class of measures, with a reinforcement which does not obtain in the case of matrices. More precisely:

1. Any absolutely Lebesgue-continuous "bistochastic" measure in a square is represented in the form of an integral of pairwise singular measures, each of which is also "bistochastic" and concentrated in the graph of a certain mutually unambiguous conserving measure of the transform. In particular, a transform is found, the graph of which has a "bistochastic" measure with density other than zero.

2. There is a closed subset of a square in which a "bistochastic" measure can be fixed with purely continuous conditional measures, but no graph of a mutually unambiguous conserving measure of the transform is contained.

From the article

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UDC: 519.211

SUDAKOV, V. N.

"On an Independent Complement to Two Partitions in the Case of Existence of Limited Density"

Tr. Mat. in-ta AN SSSR (Works of the Mathematics Institute, Academy of Sciences of the USSR), 1970, 111, pp 3-11 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V2K)

Translation: Let M be some set, U be the σ-algebra of its subsets, and μ be a probabilistic measure on this algebra. It is assumed that M is isomorphic (in the sense of isomorphism of the space with measure) with a segment with Lebesgue measure and with the possible addition of point loads. Let ξ and η be measurable partitions of M into subsets C^ξ, C^η, $C^\xi \in \xi$, $C^\eta \in \eta$, i. e. partitions of M into subsets of constancy of two measurable functions. Let $p: M \to M/\xi$ and $q: M \to M/\eta$ be canonical mappings of M into the factor spaces M/ξ and M/η respectively, while μ_ξ and μ_η are the projections of measure μ onto these factor-spaces. In this paper, an investigation is made into the problem of existence of an independent

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

SUDAKOV, V. N., Tr. Mat. in-ta AN SSSR, 1970, 111, pp 3-11

complement ζ to ξ and η, i. e. on the existence of a measurable partition ζ such that: 1) ζ does not depend on ξ or η, and 2) $M|\xi \times M|\zeta = M$ and $M|\eta \times M|\zeta = M$.

Let space M be embedded in $M|\xi \times M|\eta$. Then two measures $\mu_\xi \times \mu_\eta$ and μ are defined on this product. It is proved in this paper that if μ is absolutely continuous relative to $\mu_\xi \times \mu_\eta$ and the density is limited, then the independent complement exists. L. Gal'chuk.

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PRIBYSH, B. N., SUDAKOV, V. N.

"A Comment on a Theorem of V. S. Mikhalevich"

Zap. Nauch. Seminarov Leningr. Otd. Mat. In-ta AN SSSR [Writings of Scientific Seminars of Leningrad Division Mathematic Institute, Academy of Sciences, USSR], 1972, Vol 29, pp 14-17 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V183 by A. Novikov).

Translation: The problem is studied of sufficient statistics for a set of time-homogeneous random processes with independent increments, the measures of which are mutually absolutely continuous. The theorem of Mikhalevich (RZhMat, 1963, 5V168) gives a necessary and sufficient condition for these processes for the value of the process at the last moment in time to sufficient statistics. It is shown in this work that if only processes with purely continuous Poisson spectrum are studied, the value of the process at the last moment in time is always a sufficient statistics for them.

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USSR

SUDAKOV, V. N.

"Marginal Sufficiency of Statistics"

Zap. Nauch. Seminarov Leningr. Otd. Mat. In-ta AN SSSR [Writings of Scientific Seminars of Leningrad Division Mathematic Institute, Academy of Sciences, USSR], 1972, Vol 29, pp 92-101 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V184 by Yu. Tyurin).

Translation: Let $x_1, \ldots, x_n$ be a repeated sample from a distribution belonging to a set of mutually absolutely continuous measures on a straight line. The hypothesis of Khuzurbazar that statistics f in this case is sufficient if the conditional distribution of each coordinate x_i with the given f is independent of the selection of measure, i.e., if statistics f has the property of martingale sufficiency, is proven correct.

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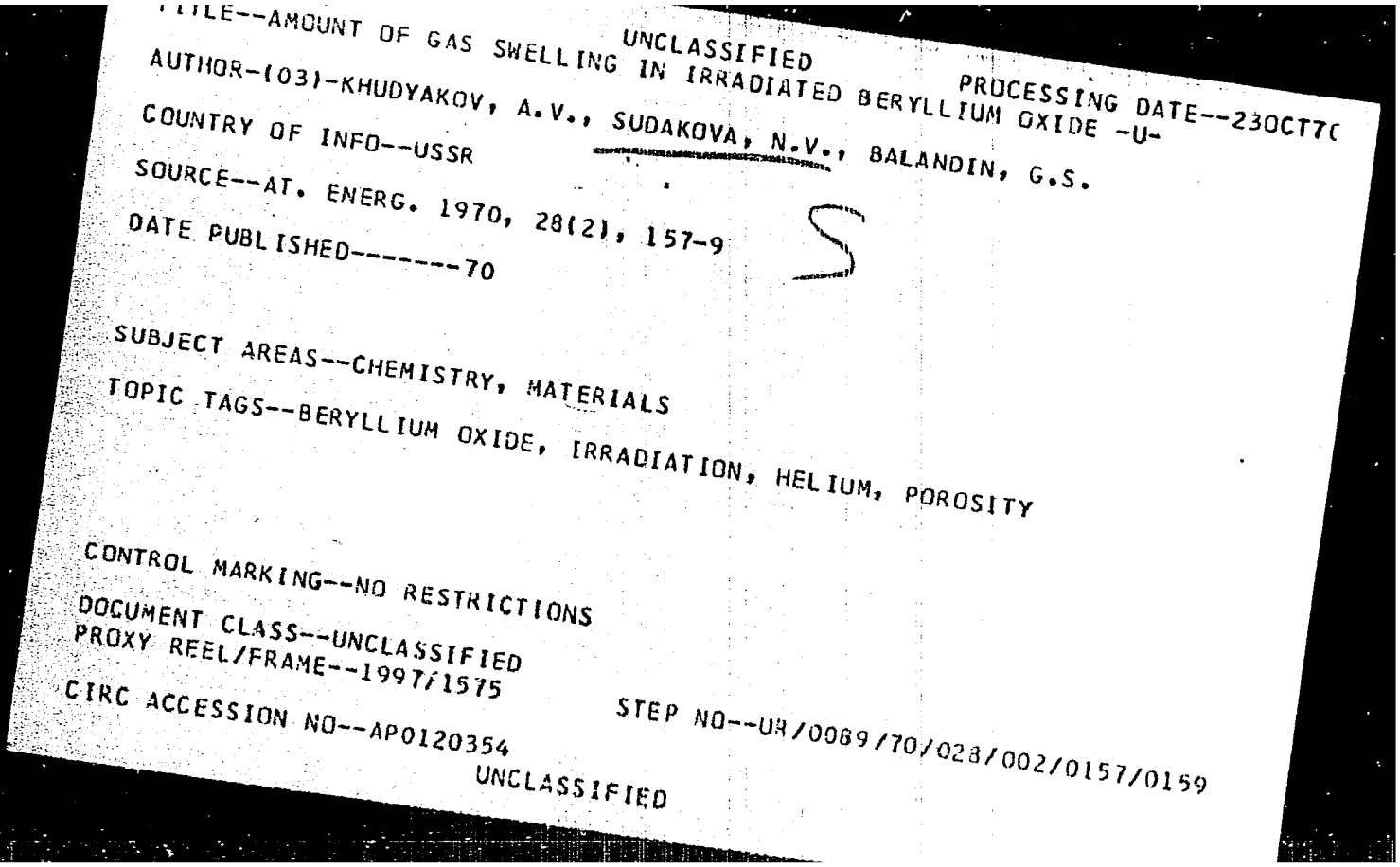

UNCLASSIFIED

TITLE--AMOUNT OF GAS SWELLING IN IRRADIATED BERYLLIUM OXIDE -U-

PROCESSING DATE--23OCT7C

AUTHOR-(03)-KHUDYAKOV, A.V., SUDAKOVA, N.V., BALANDIN, G.S.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(2), 157-9

DATE PUBLISHED-------70

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SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--BERYLLIUM OXIDE, IRRADIATION, HELIUM, POROSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1575

STEP NO--UR/0089/70/028/002/0157/0159

CIRC ACCESSION NO--AP0120354

UNCLASSIFIED

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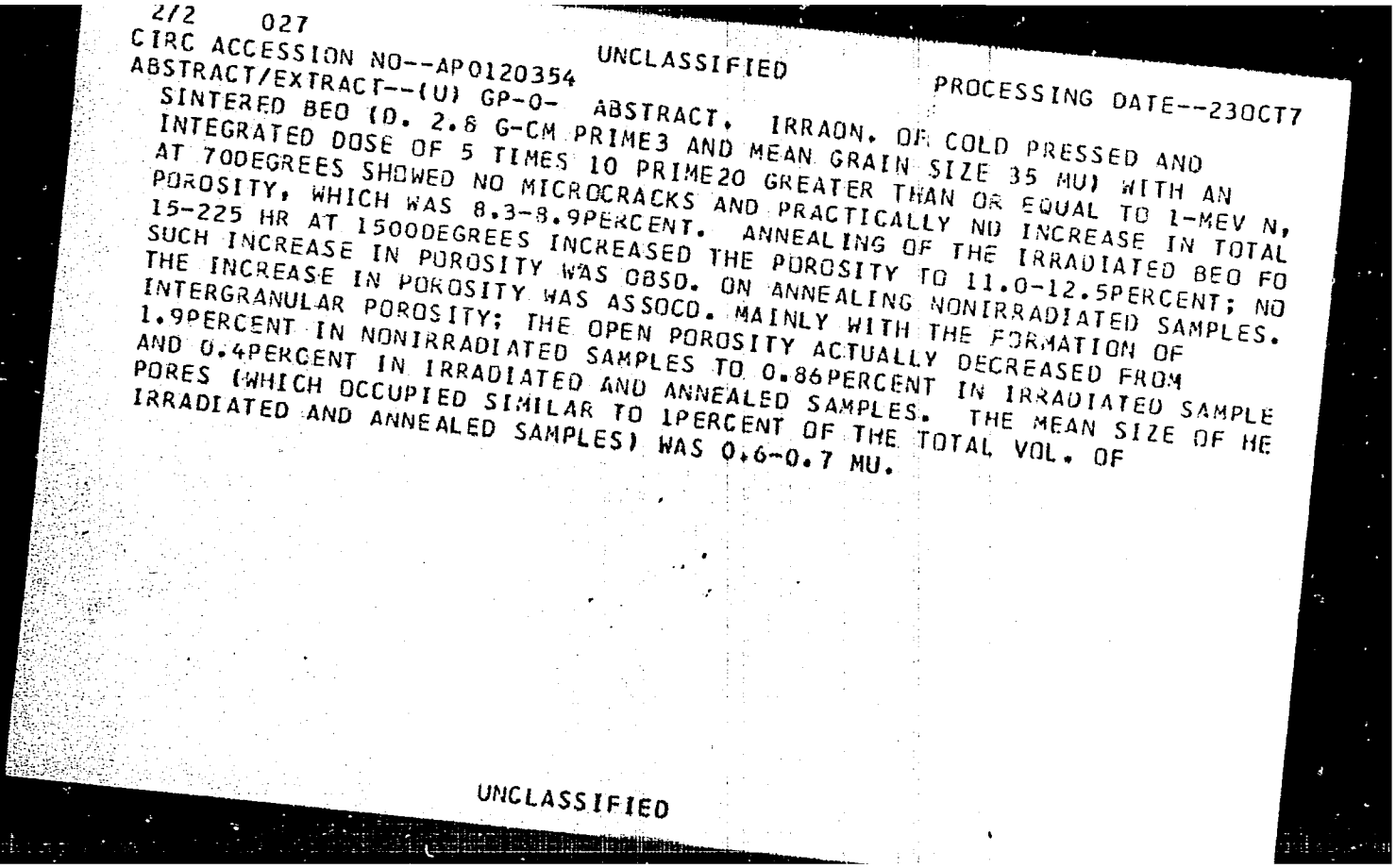

2/2 027 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120354

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IRRAON. OF COLD PRESSED AND SINTERED BEO (D. 2.6 G-CM PRIME3 AND MEAN GRAIN SIZE 35 MU) WITH AN INTEGRATED DOSE OF 5 TIMES 10 PRIME20 GREATER THAN OR EQUAL TO 1-MEV N, AT 700EGREES SHOWED NO MICROCRACKS AND PRACTICALLY NO INCREASE IN TOTAL POROSITY, WHICH WAS 8.3-8.9PERCENT. ANNEALING OF THE IRRADIATED BEO FO 15-225 HR AT 1500DEGREES INCREASED THE POROSITY TO 11.0-12.5PERCENT; NO SUCH INCREASE IN POROSITY WAS OBSD. ON ANNEALING NONIRRADIATED SAMPLES. THE INCREASE IN POROSITY WAS ASSOCD. MAINLY WITH THE FORMATION OF INTERGRANULAR POROSITY; THE OPEN POROSITY ACTUALLY DECREASED FROM 1.9PERCENT IN NONIRRADIATED SAMPLES TO 0.86PERCENT IN IRRADIATED SAMPLE AND 0.4PERCENT IN IRRADIATED AND ANNEALED SAMPLES. THE MEAN SIZE OF HE PORES (WHICH OCCUPIED SIMILAR TO 1PERCENT OF THE TOTAL VOL. OF IRRADIATED AND ANNEALED SAMPLES) WAS 0.6-0.7 MU.

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USSR

UDC 541.124

PUDOVIK, A. N., CHERKASOV, R. A., SUDAKOVA, T. M., and YEVSTAF'YEV, G. I., Kazan' State University Imeni V. I. Ul'yanov-Lenin

"Addition of Phosphorus Dithioacids to the C≡N Bond"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 1, Jul-Aug 73, pp 113-115

Abstract: The reactions of diisopropyldithiophosphoric acid with benzonitrile and the reaction of diphenyldithiophosphinic acid with benzonitrile, cyanoacetic ester and diethyl cyanomethylphosphonate were investigated. Diisopropyldithiophosphoric acid adds to benzonitrile in an equimolar ratio, in the cold, and without any catalysts. Thiobenzamide precipitates after 10-12 days. Treating this mixture with pentane, followed by separation of solid thiobenzamide and cooling the pentane to -10° yields yellow crystalline O,O-diisopropyl S-benzylimidoyldithiophosphonate m.p. 58-59°. Diphenyldithiophosphinic acid reacts easily with benzonitrile at room temperature yielding thiobenzamide and tetraphenyltrithiopyrophosphinate regardless of the ratio of reagents taken. Analogous reaction course is observed in case of the other reagents mentioned. Thus it has been shown that phosphoric dithioacids add to the C≡N bond forming imidoyldithiophosphates -- expressed thiophosphorylating agents.

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USSR

UDC 547.26'118

PUDOVIK, A. N., SUDAKOVA, T. M., Kazan' State University imeni V. I. Ul'yanov-Lenin

"Addition of Phosphinous Acids to the Nitrile Group"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, p 1646

Abstract: Phosphinous acids add to the triple -C≡N bond of nitriles, resulting in synthesis of oxides of substituted iminophosphines. Diphenylphosphinous acid reacted with benzonitrile in the presence of catalytic quantities of sodium alkoxide to give diphenyl(aminophenyl methyl)phosphine oxide, and phosphinous acids reacted with chloroacetonitrile with replacement of the chlorine in the chloroacetonitrile accompanied by liberation of hydrogen chloride, after which a second molecule of phosphinous acid adds to the resultant dialkyl(aryl)phosphinoacetonitrile.

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USSR

UDC 547.241

PUDOVIK, A. N., and SUDAKOVA, T. M., Kazan' State University imeni V. I. Ul'yanov-Lenin

"Addition of Oxides and Sulfides of Secondary Phosphines to Acrylic and Methacrylic Acid Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1962-1964

Abstract: It is shown that the reactivity of oxides of secondary phosphines in addition reactions to acrylonitriles is considerably higher than that of appropriate phosphites and phosphinates. The reactivity of thione derivatives is higher than that of phosphoryl compounds. The study involved addition of oxides and sulfides of secondary phosphines containing butyl and phenyl radicals as well as a series of partial esters of phosphoric acids with the same radicals to acrylonitriles. The reactivity was evaluated from the degree of completeness of the addition over specific time intervals. The reactions were conducted in solutions of butyl alcohol and dioxane (10:1); potassium tertiary butoxide was used as the catalyst. Data on the reactivities of secondary phosphines versus dialkyl-phosphinates and dialkyl phosphates cited in tables in the original article imply that the inductive effect of the radicals at the phosphorus is the factor most responsible for the reactivities of these compounds in addition reactions.

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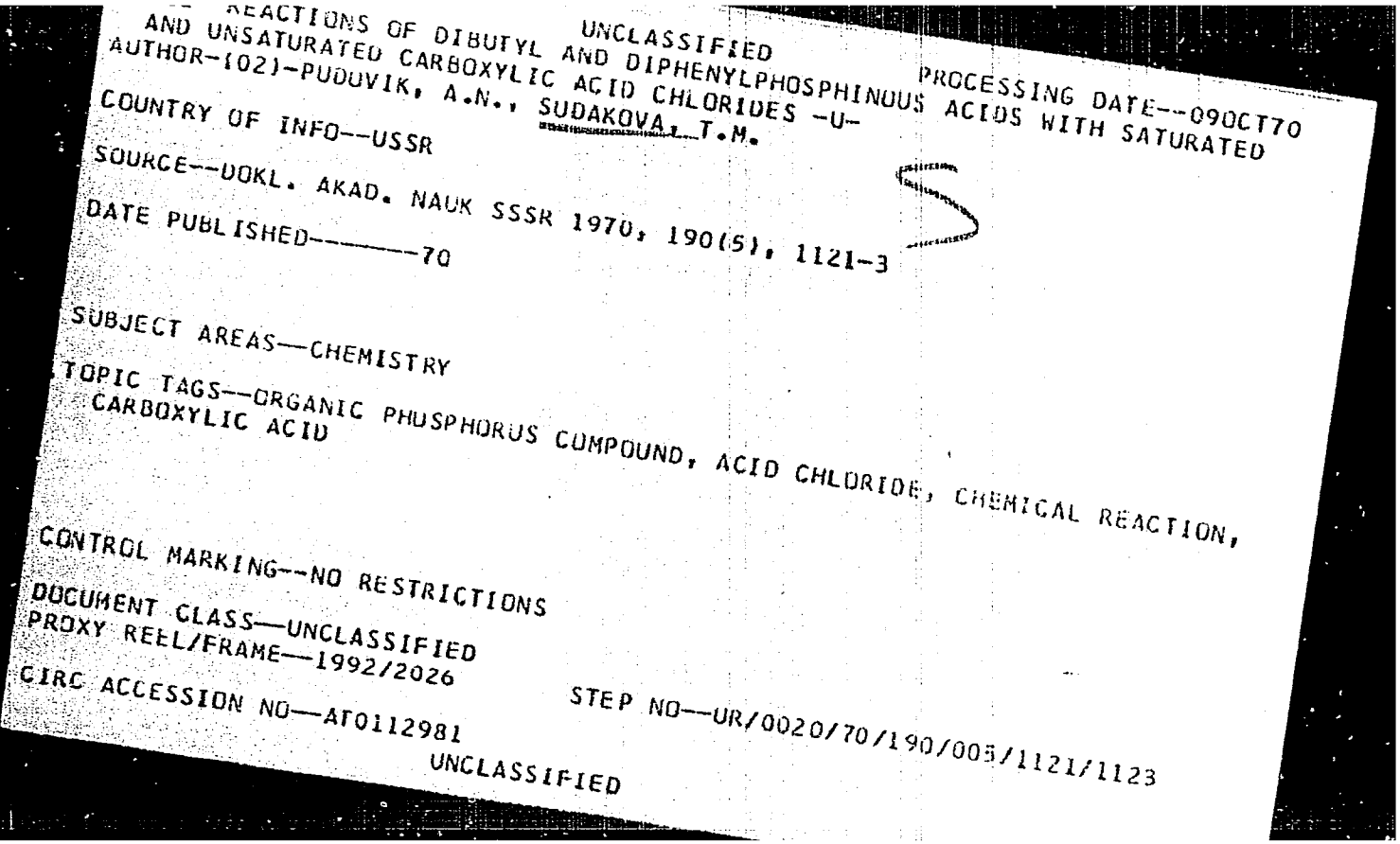

UNCLASSIFIED

REACTIONS OF DIBUTYL AND DIPHENYLPHOSPHINOUS ACIDS WITH SATURATED AND UNSATURATED CARBOXYLIC ACID CHLORIDES -U-

PROCESSING DATE--090CT70

AUTHOR-(02)-PUDOVIK, A.N., SUDAKOVA, T.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1121-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, ACID CHLORIDE, CHEMICAL REACTION, CARBOXYLIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/2026

STEP NO--UR/0020/70/190/005/1121/1123

CIRC ACCESSION NO--AT0112981

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4"

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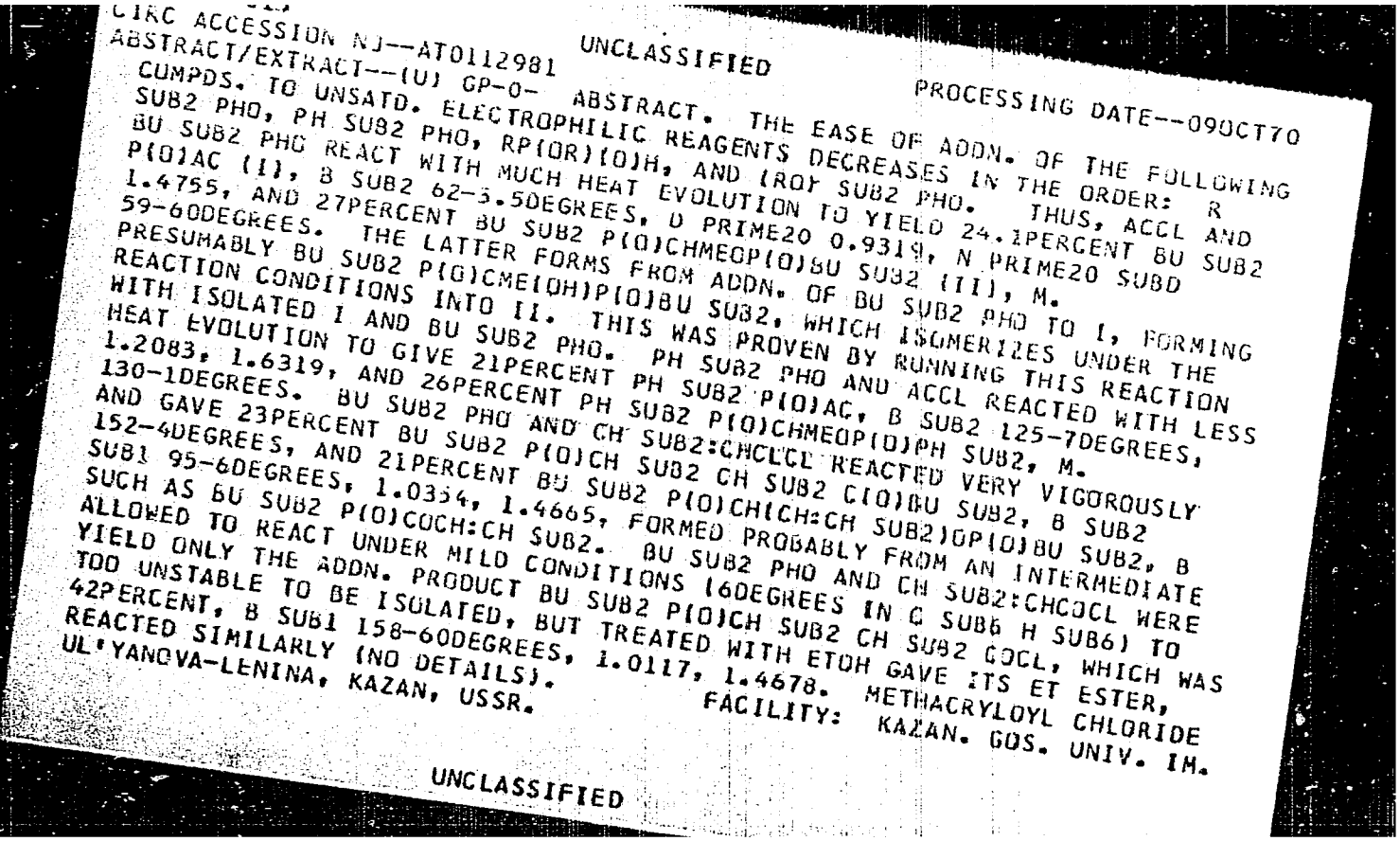

CIRC ACCESSION NO--AT0112981 UNCLASSIFIED PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EASE OF ADDN. OF THE FOLLOWING CUMPDS. TO UNSATD. ELECTROPHILIC REAGENTS DECREASES IN THE ORDER: R SUB2 PHO, PH SUB2 PHO, RP(OR)(O)H, AND (RO) SUB2 PHO. THUS, ACCL AND BU SUB2 PHO REACT WITH MUCH HEAT EVOLUTION TO YIELD 24.1PERCENT BU SUB2 P(O)AC (I), B SUB2 62-3.5DEGREES, D PRIME20 0.9319, N PRIME20 SUBD 1.4755, AND 27PERCENT BU SUB2 P(O)CHMEOP(O)BU SUB2 (II), M. 59-60DEGREES. THE LATTER FORMS FROM ADDN. OF BU SUB2 PHO TO I, FORMING PRESUMABLY BU SUB2 P(O)CME(OH)P(O)BU SUB2, WHICH ISOMERIZES UNDER THE REACTION CONDITIONS INTO II. THIS WAS PROVEN BY RUNNING THIS REACTION WITH ISOLATED I AND BU SUB2 PHO. PH SUB2 PHO AND ACCL REACTED WITH LESS HEAT EVOLUTION TO GIVE 21PERCENT PH SUB2 P(O)AC, B SUB2 125-7DEGREES, 1.2083, 1.6319, AND 26PERCENT PH SUB2 P(O)CHMEOP(O)PH SUB2, M. 130-1DEGREES. BU SUB2 PHO AND CH SUB2:CHCLCL REACTED VERY VIGOROUSLY AND GAVE 23PERCENT BU SUB2 P(O)CH SUB2 CH SUB2 CL(O)BU SUB2, B SUB2 152-4DEGREES, AND 21PERCENT BU SUB2 P(O)CH(CH:CH SUB2)OP(O)BU SUB2, B SUB1 95-6DEGREES, 1.0354, 1.4665, FORMED PROBABLY FROM AN INTERMEDIATE SUCH AS BU SUB2 P(O)COCH:CH SUB2. BU SUB2 PHO AND CH SUB2:CHCOCL WERE ALLOWED TO REACT UNDER MILD CONDITIONS (60DEGREES IN C SUB6 H SUB6) TO YIELD ONLY THE ADDN. PRODUCT BU SUB2 P(O)CH SUB2 CH SUB2 COCL, WHICH WAS TOO UNSTABLE TO BE ISOLATED, BUT TREATED WITH ETOH GAVE ITS ET ESTER, 42PERCENT, B SUB1 158-60DEGREES, 1.0117, 1.4678. METHACRYLOYL CHLORIDE REACTED SIMILARLY (NO DETAILS). FACILITY: KAZAN. GOS. UNIV. IM. UL'YANOVA-LENINA, KAZAN, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

PUDOVIK, A. N., Corresponding Member of the Academy of Science USSR, and SUDAKOVA, T. M., Kazan State University imeni V. I. Ul'yanov-Lenin, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"Reactions of Dibutyl- and Diphenylphosphinic Acids With Acid Chlorides of Saturated and Unsaturated Carboxylic Acids"

Moscow, Doklady AN SSSR, Vol 190, No 5, Feb 70, pp 1121-1123

Abstract: Dibutyl phosphinic acid reacts with acrylic and metacrylic acid chloride under mild conditions basically by an addition reaction and at higher temperatures by an addition and a replacement reaction. Examples follow. The reaction of dibutylphosphinic acid with acrylic acid chloride is accompanied by a strong exothermic effect yielding β-(dibutylphosphonium)-propionyldibutylphosphine oxide, b.p. 152-154°/2 mm and α-(dibutylphosphonium)-propenyl ester of dibutylphosphinic acid, b.p. 95-96°/1 mm, d_4^{20} 1.0354, n_D^{20} 1.14665. The same reaction carried out in benzene solution at +6°C yields dibutylphosphonylpropionic acid chloride which decomposes on distillation and therefore is converted to the ethyl ester, b.p. 158-160°/1 mm, d_4^{20} 1.0117, n_D^{20} 1.4678. An analogous reaction occurs between dibutyl-

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USSR

PUDOVIK, A. N. and SUDAKOVA, T. M., Doklady AN SSSR, Vol 190, No 5, Feb 70, pp 1121-1123

phosphinic acid and acetyl chloride, the mixture being heated by the exothermic reaction to 60 C, and it yields the dibutylacetylphosphine oxide, b.p. 62-63.5°/2 mm, d_4^{20} 0.9319, n_D^{20} 1.4755, and α-(dibutylphosphonic)-ethyl ester of dibutylphosphinic acid, m. p. 59-60°. The reaction of acetyl chloride with diphenylphosphinic acid is less energetic, yielding acetyldiphenylphosphine oxide, b.p. 125-129°/2 mm, d_4^{20} 1.2083, n_D^{20} 1.6319, and α-(diphenylphosphonic)-ethyl ester of the diphenylphosphinic acid, m.p. 130-131°.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4"

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USSR

UDC 547.26'118

PUDOVIK, A. N., SUDAKOVA, T. M., RAYEVSKAYA, O. YE., and CHEBECHKINA, V. A., Kazan State University imeni V. I. Ul'yanova-Lenina

"Reactions of Phosphonous Acids with the Malononitrile"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 8, 1972, pp 1727-1730

Abstract: On the basis of the rather large reactivity of the dialkyl- and diarylphosphonous acids, a study was made of the addition of diphenyl, dibutyl-, dihexyl-, and dioctylphosphonic acids to malononitrile. Heating a mixture of the phosphonic acids with malononitrile in benzene or hexane to 80°C for 2-3 hours resulted in the following reaction:

$$R_2P(X)H + CH_2(CN)_2 \xrightarrow[R = C_4H_9,\ C_6H_{13},\ C_8H_{17},\ C_8H_{17};\ X = O,\ S]{R'ONa} R_2P(X)-C(NH)-CH_2CN \rightleftarrows R_2P(X)-C(NH_2)=CHCN$$

Both a 1:1 mixture of the reagents and amixture containing an excess of the phosphonous acid resulted in a product containing 1 atom of each reactant. IR spectra indicate that the simple addition product undergoes imino-amino tautomerization, as in the above equation, and also intermolecular hydrogen bonding.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC: 621.372.54

IL'IN, P. A., SUDAKOVA, V. I., RYABOV, Yu. A.

"An Electromechanical Filter"

USSR Author's Certificate No 281672, filed 4 Nov 68, published 29 Dec 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V439 P)

Translation: An electromechanical filter is proposed which contains sections formed by series-connected resonators and restraints which operate in the torsional vibration mode. To improve the resistance of the filter to vibration, its sections are arranged in parallel and interconnected by restraints which operate in the longitudinal vibration mode, and the free ends of the sections are connected to the base through quarter-wave resonators.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 547.26'118 + 547.446.1

PUDOVIK, A. N., GAZIZOV, T. Kh., and SUDAREV, Yu. I., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Reaction of Trimethylsilyl Diethyl Phosphite With Chloral"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, p 2086

Abstract: Trimethylsilyl diethyl phosphite reacts with chloral in ether solution at -60° yielding diethyl α-trimethylsiloxy-β,β,β-trichloroethylphosphonate (I), d_4^{20} 1.2474, n_D^{20} 1.4610. Heating (I) at 140-150°/100 mm for 16 hrs yields diethyl β,β-dichlorovinyl phosphate b.p. 127-128°/12 mm, d_4^{20} 1.2990, n_D^{20} 1.4490 and trimethylchlorosilane, b.p. 55-56°, d_4^{20} 0.8571, n_D^{20} 1.3855.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 547.26'118 + 547.442.2

GAZIZOV, T. Kh., KIBARDIN, A. M., PASHINKIN, A. P., SUDAREV, Yu. I., and PUDOVIK, A. N., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Academy of Sciences, USSR

"Reactions of the Trimethylsilyldiethyl Ester of Phosphorous Acid With Diacetyl"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 679-680

Abstract: Reacting trimethylsilyldiethyl ester of phosphorous acid with diacetyl at a temperature below 20° yields diethyl-α-trimethylsiloxy-α-acetoethylphosphonate, b.p. 84-86°/1 mm, d_4^{20} 1.1180, n_D^{20} 1.4335. The structure was confirmed by an independent synthesis from diethyl-α-hydroxy-α-acetoethylphosphonate and trimethylchlorosilane and by IR and NMR ^{31}P spectroscopic analysis.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

1/2 030 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--ORIGIN OF DEFORMATION CONTRAST STUDIED ON THE BASIS OF THE POSITION OF THE CONTRAST FREE LINES IN TITANIUM AND NIOBIUM ALLOYS -U-

AUTHOR-(04)-SUDAREVA, S.V., BUINOV, N.N., VOZILKIN, V.A., BYCHKOVA, M.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 87-96

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--TITANIUM ALLOY, NIOBIUM, ELECTRON MICROSCOPY, METAL DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0190 STEP NO--UR/0126/70/029/001/0087/0086

CIRC ACCESSION NO--AP0054986

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

2/2 030 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054986

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AFTER TEMPERING OF TI-NB ALLOYS THERE IS OBSD. ON ELECTRON MICROGRAPHS OF SUCH ALLOYS A CONTRAST IN THE FORM OF PAIRS OF DARK SEGMENTS WITH A ZERO INTENSITY LINE. THE NATURE OF THESE DEFECTS WAS STUDIED WITH THE AID OF THE DEFORMATION CONTRAST THEORY. A METASTABLE ALPHA PHASE WAS OBSD., COHERENTLY BONDED WITH THE MATRIX. THE OBSD. CONTRAST IS NOT ASSOCD. WITH VACANCY LOOPS, BUT IS CAUSED BY COHERENT DEFORMATION FIELDS AROUND THE PARTICLES OF THE ALPHA PHASE AND SOMETIMES THE OMEGA PHASE, DEPENDING ON THE STRUCTURAL STATE OF THE ALLOY.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

Transformation and Structure

USSR

UDC: 620.181:546.821.882

SUDAREVA, S. V., BUYNOV, N. N., VOZILKIN, V. A. and BYCHKOVA, M. I., Institute of Physics of Metals, Academy of Sciences USSR

"Investigation of the Occurrence of Strain Contrast According to the Position of the Line of No Contrast"

Sverdlovsk, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 87-96

Abstract: The nature of strain contrasts in the form of a pair of dark segments with a line of zero intensity, observed on electron microphotographs of Ti-Nb alloys after tempering, was investigated using the strain contrast theories. The form of alpha-phase particles and the geometry of stress fields near them were studied. The arrangement of atoms in the (1$\bar{1}$0) beta-phase and in the (0001) alpha-phase planes is given. Experiments were carried out on a Ti-50% Nb alloy, with tempering at 500°C for different times, and on a Ti-39% Nb alloy after tempering at 450°C for 15 min. The results are presented in the form of bright-field microphotographs of the alloy structure after hardening and tempering for various foil orientations and effective reflections. It is shown that the observed contrast is not connected with interstitial loops but results from

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USSR

SUDAREVA, S. V., et al, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 87-96

fields of coherent strain near the alpha-phase, and sometimes near the omega-phase particles, depending on the alloy structure state. The observed strain contrast confirmed the previously obtained theoretical and experimental data on strain fields near ω - particles, and also certain aspects from the theory of field images. It is noted in the conclusion that the Ti-39% Nb alloy hardened according to the B procedure disintegrates more slowly than that hardened by the A procedure. The omega-phase particles grow to large sizes; they retain the coherent bond and are present in great quantities in the alloy after 1 hour of annealing. However, metastable alpha-phase particles are present in the alloy. The experimental results obtained on the Ti-39% Nb alloy structure will be used in the future to establish the relationship between the superconducting properties and the structure.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 546.791.6'161-31'

TSVETKOV, A. A., SELEZNEV, V. P., SUDARIKOV, B. N., GROMOV, B. V., and PEGANOV, V. A., Moscow Chemical-Technological Institute imeni D. I. Mendeleyev

"Complex Compounds of Uranyl Fluoride With Water and Hydrogen Fluoride"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 16, No 3, Mar 71, pp 768-771

Abstract: Three complex uranyl fluoride compounds were isolated in the system UO_2F_2-HF-H_2O: $H_2[UO_2F_4]\cdot 4\ H_2O$, $H[UO_2F_3]\cdot 2\ H_2O$, and $H[(UO_2)_2F_5]\cdot 4\ H_2O$. All of these materials form salts with alkali metals and ammonia; their structures were studied. Thermodynamical properties of these compounds were determined by means of differential thermal analysis.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 546.791.6.161

TSVETKOV, A. A., SELEZNEV, V. P., SUDARIKOV, B. N., GROMOV, B. V., Moscow Institute of Chemical Technology imeni D. I. Mendeleyev

"Basic Uranyl Fluorides"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol XVIII, No 1, 1973, pp 12-15

Abstract: The possibility of the formation of the basic salt of uranyl fluoride was demonstrated by Marshall, et al. [J. Amer. Chem. Soc., No 76, 4279, 1954] when studying the phase diagram of the uranyl fluoride and water systems. Yu. A. Buslayev, et al. [Dokl. AN SSSR, No 148, 832, 1963] detected the existence of hydrated hydroxofluoruranyl which precipitates as the equilibrium bottom phase in the range of 0.59-8.39% by mass of HF. In the present work, the differential thermal analysis method was used in combination with chemical and x-ray phase analysis to demonstrate the existence of two separate hydrates of the basic salts of variable composition in the UO_3-HF-H_2O system: 1) $UO_2(OH)_xF_{2-x}\cdot 2H_2O$ and $UO_2(OH)_xF_{2-x}\cdot H_2O$ where x = 0.3-1.2. A study was made of the structure of the salts, and some of their thermodynamic characteristics were determined. The thermogravimetric curve of the decomposition of $UO_2(OH)_xF_{2-x}\cdot 2H_2O$ and tabulated data for the analysis of the basic salts of uranyl fluoride are presented. The heats of formation and the isobaric-isothermal potentials of the formation of the basic salts of uranyl fluoride and their errors are also calculated.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--IRREVERSIBLE THERMODYNAMICS OF SOME PHENOMENA IN DISCONTINUOUS SYSTEMS. DIFFICULTIES INVOLVED IN A THERMODYNAMIC INTERPRETATION OF THE

AUTHOR-(02)-SUDARIKOV, S.A., KAPUTSKIY, F.N.

COUNTRY OF INFO--USSR

SOURCE--VESTSI AKAD. NAVUK BELARUS. SSR, SER. KHIM. NAVUK 1970, (1), 116-18

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--IRREVERSIBLE THERMODYNAMICS, THERMAL DIFFUSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1443 STEP NO--UR/0419/70/000/001/0116/0118

CIRC ACCESSION NO--AP0118432

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

2/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118432

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS PROVEN THAT THERMODYNAMICS OF IRREVERSIBLE PROCESSES AND COMMON CALCN. OF THE GRADIENT OF DIFFUSION POTENTIAL GIVE THE SAME RESULTS ONLY OWING TO THE FACT THAT MANY AUTHORS DISREGARD CROSS EFFECTS IN THEIR THERMODYNAMIC CALCNS.

FACILITY: BELORUSS. GOS. UNIV. IM. LENINA. MINSK, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 631.811:631.589.2:541.183.12

SOLDATOV, V. S., PERYSHKINA, N. G., KHOROSHKO, R. P., SUDARIKOVA, N. I., Institute of General and Inorganic Chemistry, Academy of Sciences Belorussian SSR, Minsk

"Ionite-Base Synthetic Nutrient Media for Plant Growth. Communication III. Methods of Regenerating Ionite Substrata"

Moscow, Agrokhimiya, No 12, Dec 71, pp 86-91

Abstract: Analysis of substrata after 5-7 vegetation cycles indicates nearly complete depletion of potassium and partial depletion of nitrogen. Earlier research points to a theoretical possibility of producing artificial ionite-base media for plant cultivation. Detailed here are two new experimental procedures involving rapid regeneration of depleted substrata and restoration of productivity. The first method specifies individual additions of potassium and nitrogen in the form of potassium hydroxide and nitric acid in amounts equivalent to the deficit of the appropriate element. The second method involves the treatment of soil with a diluted solution of potassium nitrate containing

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

SOLDATOV, V. S., et al, Agrokhimiya, No 12, Dec 71, pp 86-91

both basic regenerated ions in the form of a neutral salt. Preference is given to the second variant since it places no stringent requirements on dosage additives or thorough mixing of the soil. Subsequent treatment of the substrates with H_2O_2 solutions to inactivate the plant metabolites and increase the soil's productivity is suggested. The optimum H_2O_2 concentration is cited as 0.2% (27 ml of 30% H_2O_2 per 1 kg of dry soil). Higher concentrations are said to have adverse effects on the plants. (2 tables, 3 biblio. references)

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC: 539.311

GRIGORENKO, Ya. M., SUDAVTSOVA, G. K., Kiev

"Spherical-Class Envelopes of Rotation with Local Loads on a Belt"

Kiev, Prikladnaya Mekhanika, Vol 9, No 6, Jun 73, pp 24-30.

Abstract: The problem of the stress-strain state of thin elastic spherical-class envelopes with thickness variable in the meridianal direction under the influence of local loads on a belt is studied. The problem is solved by a stable numerical method. The results produced are compared with the precise solution. Using specific examples, the influence of envelope curvature with various degrees of local loading is studied. An example of calculation of a closed ellipsoidal envelope of variable thickness is presented. The maximum stresses in an envelope of variable thickness differ from the stresses in an envelope of constant thickness by less than 1%. The difference for bends is not over 3%, although the weight of the envelope of variable thickness can be reduced by 35%.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 621.791.754'264

UL'YANOV, V. I., Engineer, PARFESSA, G. I., Candidate of Technical Sciences, VYSOTSKIY, G. A., Engineer, Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences Ukrainian SSR, and SUDAVTSOVA, V. S., Engineer, Kiev State University imeni T. G. Shevchenko

"Influence of Titanium on the Technological Properties of Type Sv-08G2S Wire"

Kiev, Avtomaticheskaya Svarka, No 6 (243), Jun 73, pp 59-62

Abstract: The authors studied the influence of titanium on the technological properties of type Sv-08G2S wire during welding in carbon dioxide. They showed that doping 0.3-0.4 percent Ti permits reducing the sputtering during CO_2 welding and improving the mechanical properties of the seam metal. They suggest studying additional measures to increase the resistance of the seam metal to crystallization cracks. The article contains 2 tables, 4 figures, and 7 bibliographic references.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

SUD'BIN, A.I.

JPRS 60572
19 Nov 73

(3)

STUDY OF FLUCTUATIONS OF UNDERWATER IRRADIANCE

[Article by K. S. Shifrin, V. N. Pelevin, and A. I. Sudbin; Leningrad, Okeana i Atmosfery, Russian, Izdatel'stvo Nauka, 1972, pp 174-181]

Investigation of the structure of a natural light field in the ocean is an important problem of optics of the ocean. Information about the spectral, angular and polarization characteristics of the field is important both in itself and as the starting information for optical methods of sounding the ocean.

The simplest characteristic of the light field is the irradiance of the horizontal surface E. Observations have shown that the value of E(z) (z = depth) experiences considerable fluctuations in time. Consequently, for a complete description of natural irradiance in the ocean it is necessary to know not only the mean values of E on different horizons but also its

The mean irradiance has already been the object of investigations for many years. In particular, it has been established that it decreases with depth as exp(-αz). The values of α (the index of vertical attenuation) have been obtained for various regions of the world ocean. As for investigations of fluctuations of irradiance, data on that question are very scanty (to depths (z ≤ 10 meters). Measurements at great depths and in the open ocean are not known to us. In the present article a description is given of a procedure for measurements of fluctuations of underwater irradiance in open regions of the ocean to depths z = 200-300 meters. Also presented in it are some data obtained in measurements of fluctuations of irradiance made at four points of the Pacific Ocean at depths z ≤ 100 meters. Those measurements were made on the fifth journey of the "Dmitriy Mendeleyev" in 1971. Table 1 presents the values of parameters characterizing the experimental conditions.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

SUD'BINA, Ye. N., PULATOVA, M. K., and KAYUSHIN, L. P., Institute of Biological Physics, Academy of Sciences USSR, Pushchino

"Electron Spin Resonance Investigation of the Nature and Properties of Paramagnetic Centers in Gamma-Irradiated Proteins"

Moscow, Biofizika, Vol 16, Vyp 4, Jul/Aug 71, pp 596-602

Abstract: Polycrystalline proteins -- serum albumin, egg albumin, lysozyme, pepsin, and trypsin -- and silk fibroin were irradiated with 10 Mrad of Co^{60} gamma rays at -196°C. Electron spin resonance investigations revealed formation of the following paramagnetic centers: trapped electrons, anion radicals with unpaired electrons located at the S-S bonds, in aliphatic amino acid residues with unpaired electrons, and at the alpha carbon atoms of peptide chains from which hydrogen atoms are detached. After irradiation at room temperature, paramagnetic centers are formed on H-binding oxygen atoms with unpaired electrons and on RS groups.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 599.323.4:577.9(470.311)

SUDEYKIN, V. A., LYAPUNOVA, K. L., and TIKHOMIROV, S. I., Central Control-Research Laboratory of the Moscow City Disinfection Station

"Multiplication of the Ordinary Hamster (Cricetus cricetus) in the Territory of the City of Moscow"

Moscow, Zoologicheskiy zhurnal, Vol 51, No 8, 1972, pp 1,258-1,259

Abstract: Evidence has reached the Control-Research Laboratory of the Moscow Municipal Disinfection System of the multiplication of the hamster population in the city. In 1971, burrows of the animals were found throughout the fields from the banks of the Moscow River to the city limits. The territory occupied by the animals is at most 25 square kilometers, limited by the bends of the river and the houses of the city. It is estimated that, at the present time, hamsters have an uneven population distribution over the Lyublinskiy fields; the probability is that in the course of a long period of time the population will sink to an unnoticeable level.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 543.253

SUDNIK, M. V., and ROMANTSEV, M. F.

"Polarographic Investigation of Stabilized Imino Acid Radicals"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 743-746

Abstract: The stabilized imino acid (I-IV) were investigated polarographically using a mercury calomel electrode. New data were accumulated on the change in response of the imido acid to solvents -- 20% and 90% methanol, benzene-methanol, and dimethylformamide (DMF) -- and other environmental conditions, and of substitution (-OH, -Cl, and = O) in the ring. The value of $-E_{1/2}$ increased in the above order of solvents -- from about 0.25 for 20% ethanol to 1.25 for DMF. The value of $-E_{1/2}$ decreased in the order I, II, III, IV. The reduction of the imino acid radical proceeds with the transfer of one electron.

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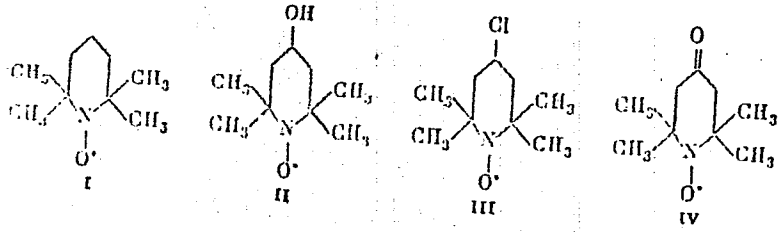
"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

SUDNIK, M. V. and ROMANTSEV, M. F., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 743-746



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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC: 532.59: 627.81

SUDOBICHER, V.G., Engineer

"Motion of Dam Breach Wave"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 11, 1972, pp 44-46

Abstract: A method is proposed to determine the flow through a breach of a dam. It is assumed that the river bed downstream from the dam is initially dry. The profile of the river bottom upstream and downstream of the dam and the river bed width at various heights above the bottom should be given. The systems of differential equations (1) and integral equations (2) characterize the flow. The distance from the dam and the time are used as the independent variables. The problem is solved by successive approximations by means of a computer. A numerical example is given to illustrate the method. The free surface profiles are shown for several time durations after the breach. In this example it takes 31 minutes for the wave front to reach a point 16 km downstream from the dam.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 547.341.07(088.8)

PUDOVIK, A. N., SUDOKHOVA, T. M., and YEVSTAF'YEV, G. I.

"Addition Reactions of Phosphinous Acid to Malonic Acid Dinitrile"

Doklady Akademii Nauk SSSR, Vol 208, No 1, 1973, pp 111-113

Abstract: The earlier work of the authors has shown the ease with which addition reactions proceed between dialkyl- and diarylphosphinous acids and nitriles at the nitrile group, when the reaction is activated by electronegative groups. The current investigation is the continuation of the earlier work dealing with the elucidation of the effect of substituents of the phosphorus atom on the overall reaction rates. This article deals with gas-liquid chromatographic investigation of the reaction kinetics of a series of phosphinous acids with malononitrile. The reaction rate was monitored by the decrease of the concentration of nitrile in the reaction mixture. The investigated reactions were found to be of second order. The increase in the length of the hydrocarbon chain leads to a higher value of the energy of activation. Sodium ethoxide has a strong catalytic effect on the described reaction rates. Solvent effects are also significant.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR
SUDOL'SKIY, A. S.

"Distribution of Characteristics of Turbulence of Wind Flow by Depth"

Tr. Gos. Gidrolog. In-t. [Works of the State Hydrologic Institute], 1972, No 190, pp 171-187, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 B553, by the author).

Translation: Information is presented on the turbulent characteristics of wind flows, produced from materials of studies in aerohydraulic traps with various depths and various air flow velocities. The motion of the fluid was defined by optical tracking of weightless solid particles. The reasons for turbulization of wind flow and changes in the flow structure as a function of defining factors are discussed. It is shown that the turbulence characteristics (mean square deviations of longitudinal and vertical velocity components, intensity of turbulence and turbulent stresses) are distributed unevenly through the depth of the wind flow. The greatest values of these characteristics are found primarily in the layer (0.1-0.2) H. They decrease sharply toward the surface, and decrease comparatively smoothly toward the base. The values of turbulence characteristics defined over the entire depth increase approximately in proportion to the wave parameters and wind speeds. 16 Biblio. Refs.

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USSR

UDC 616-001.34-057

MIKULINSKIY, A. M., SUDONINA, L. T., LASHCHENKO, N. S., KOSSOVSKIY, N. N., and AZOVSKAYA, I. I., Gor'kiy, Institute of Labor Hygiene and Occupational Diseases

"Physiological and Clinical Characteristics of Vibration Sickness in Individuals Working With High-Frequency Rotational Instruments and Ways of Preventing it"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 12, 1971, pp 15-18

Abstract: Vibration sickness was diagnosed in 19.5% of 296 aviation industry workers working with machines producing vibrations of 63-2000 Hz. It was characterized by disturbances of the peripheral blood circulation, loss of sensitivity to vibration after 1-4 years of work with vibrating instruments, neurotrophic abnormalities and angiospasmatic reaction of the peripheral blood vessels of the upper limbs. Cardiograms of 11 workers (of 26 tested) showed some abnormalities. X-ray studies showed generative-dystrophic changes in the hand bones, such as cysts, enostosis, aseptic necrosis, and degenerative arthrosis. Spinal changes were in a form of degenerative spondyloarthrosis of the neck and chest vertebrae. A pronounced vegetative-sensory

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USSR

UDC: 621.391:519.2

PESTRYAKOV, V. B., SENYAVSKIY, A. L., SUDOVTSEV, V. A.

"Noise Suppression in a Small-Channel Communications System"

V sb. Metody pomekhoustoychivogo priyema ChM i FM (Methods of Interference-Free FM and PM Reception--collection of works), Moscow, "Sov. radio", 1970, pp 231-237 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A31)

Translation: The authors examine problems of the passage of several signals of different power through a channel which contains an ideal band limiter. It is shown that in the case of a small number of signals with stable phase ratios, noise suppression is qualitatively different from power suppression. The magnitude of the suppression in this case depends on the aggregate of parameters acting on the input. It is noted that the difference in the initial phases of the signals has an appreciable effect on the magnitude of suppression. The results found in the work may be used in analyzing communications systems with a rebroadcaster in the case of a small number of input signals. Resumé.

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USSR

UDC 621.391:519.2

PESTRYAKOV, V. B., SUDOVTSEV, V. A., SENYAVSKIY, A. L.

"Distortion of the Amplitude-Phase Structure of Complex Signals in Linear Four-Terminal Networks"

Tr. Mosk. Elektrotekhn. in-ta svyazi (Works of Moscow Electrotechnical Communications Institute), 1970, vyp. 1, pp 22-36 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9A40)

Translation: The investigated distortions are evaluated with respect to the type of mutual correlation function between the expected signal and the signal coming to the input of the matched filter the expression for which was derived earlier (see RZh-Radiotekhnika, 1968, 11A25). There is one illustration and a one-entry bibliography.

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USSR

SUDOVTSEV, V. A.

"Mathematical Principles of Methods of Approximate Representation of Correlation Functions of Complex Signals when Distortions are Present"

Tr. Ucheb. In-tov Svyazi. M-vo Svyazi SSSR [Works of Teaching Institutes of Communications. USSR Communications Ministry], 1972, No 59, pp 22-31, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V239 by the author).

Translation: Various methods are studied for approximate representation of correlation functions of complex signals, distorted in a communications channel due to the non-ideal nature of its frequency characteristics. Areas of applications of the methods studied are defined, estimates are calculated for approximation errors and recommendations are given for the use of the methods of approximation in the analysis of the distortions of complex signals.

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USSR

UDC 539.21

KUZ'MENKO, V. M., LAZAREV, B. G., MEL'NIKOV, V. I., and SVIDOVTSOV, A. I.,
Physicotechnical Institute, Academy of Sciences Ukrainian SSR, Khar'kov

"Dependence of Amorphous-Crystalline Transition Temperature on Thickness of Metallic Layers Condensed at Liquid-Helium Temperature"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 4, Apr 72, pp 682-683

Abstract: The article describes results of a study of the dependence of the amorphous-crystalline transition temperature on layer thickness d for a series of metals (iron, bismuth, ytterbium, beryllium, gallium) condensed on glass substrates cooled with liquid helium. It was found for iron, bismuth, and ytterbium that there is a smooth decline in T_t with an increase in thickness right up to the critical value, at which a discontinuous phase transition occurs at the condensation temperature (in the present case at the liquid-helium temperature). Similar variations are found in gallium and beryllium layers, but the phenomenon is complicated by their incomplete transition from the amorphous to the crystalline state, after which in the layers above the critical thickness there remain residues of the amorphous phase in the crystalline matrix formed. The function $T_t(d)$ is related to the thermodynamic peculiarities of the thin films.

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USSR

UDC: 537.312.62

PAN, V. M., LATYSHEVA, V. I., SUDOVTSOV, A. I., MEL'NIKOV, V. I.

"On a Possible Reason for the High Critical Temperature of the Superconducting Compound $Nb_3Al_{0.8}Ce_{0.2}$"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 92-98 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D548)

Translation: The authors plot the isotherms of the cross section of the segment of the phase equilibria diagram of the niobium-aluminum-germanium system for niobium-rich alloys (up to 27.5 atomic percent aluminum and germanium) at 1700 and 1000°C. It is shown that the isomorphic compounds of Nb_3Al and Nb_2Ge form a continuous series of solid solutions at these temperatures. The form of the region of homogeneity of the phase β-$Nb_3Al_xCe_{1-x}$ is studied. It is shown that in the Nb_3Al-Nb_3Ge system (i. e. in the cross section of the niobium-aluminum germanium system with a constant niobium concentration of 75 atomic percent) the only single-phase alloys are those which have a concentration of no more than 5-7 atomic percent (the above mentioned concentrations of germanium correspond approximately to a ternary compound with the formula $Nb_3Al_{0.8}Ge_{0.2}$). It is also shown that the critical temperature of the phase β-$Nb_3Al_xGe_{1-x}$ increases (apparently according to a

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PAN, V. M. et al., Probl. sverkhprovodyashch. materialov, Moscow, "Nauka", 1970, pp 92-98

parabolic law) with an increase in the germanium content in the phase under condition of retention of a high (at least stoichiometric, i. e. 25 atomic percent) total concentration of component B (i. e. %Al+%Ge). As soon as the total concentration of component B begins to decrease and becomes lower than the stoichiometric concentration, the critical temperature falls sharply. The form of the region of homogeneity of the phase β-$Nb_3Al_xGe_{1-x}$ determined in this work shows that the highest concentration of germanium at which stoichiometric composition of the phase is still realized (%Al+%Ge $\geq$ 25) is 5-7 atomic percent. Therefore it is clear that for this particular composition, which corresponds to the formula $Nb_3Al_{0.8}Ge_{0.2}$, the highest critical temperature should be and is observed. Six illustrations, bibliography of twenty titles. Authors' abstract.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC 539.21

LAZAREV, B. G., (Academician, Academy of Sciences UkrSSR), KUZ'MENKO, V. M., SUDOVTSOV, A. I., and MEL'NIKOV, V. M.

"Specific Features of Bismuth Films Condensed at Liquid Helium Temperatures"

Moscow, Doklady Akademii Nauk SSSR (Proceedings Academy of Sciences USSR), Vol 194, No 2, 1970, pp 302-305

Abstract: Ytterbium and iron films deposited on substrates cooled by liquid helium appear to be amorphous until a critical thickness is reached, at which point they sudeenly assume their normal bulk structure. The purpose of this work is to study thin superconducting films of nonsuperconducting materials, such as bismuth, and to determine the critical thickness at which the superconducting structure changes into the nonsuperconducting modification.

Hilsch showed that fresh bismuth films are amorphous and superconducting at 6°K, but not at 14 to 20°K, at which temperature the bismuth crystalizes.

Disk-shaped films of 99.9999% pure bismuth were vacuum-deposited on glass substrates at temperatures $< 2^{\circ}K$. A stepwise crystallization occurs

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LAZAREV, B. G., et al., Doklady Akademii Nauk SSSR, Vol 194, No 2, 1971 pp 302-305

at a film thickness of ~600 Å. The change in phase also occurs at temperatures of 12 to 35°K, accompanied by a twenty-fold increase in resistance. For less pure films, phase conversion occurs at about 1300 Å.

From resistance-temperature curves it is found that traces of the amorphous phase remain up to temperatures of 25°K. Films thicker than 1300 Å develop cracks. Comparisons are made with films of differenr geometries. Ribbins exhibit different behavior, possibly due to edge effects, where thickness is less than at the center. The 14 disks tested produced identical results.

Orig. art. has 4 figures and 12 refs.

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Acc. Nr: AP0043586

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 434-437

Ref. Code: UR 0056

ON THE MINIMUM OF THE ELECTRICAL RESISTANCE OF IRON, COPPER, LUTETIUM AND THULIUM LAYERS OBTAINED BY LOW TEMPERATURE CONDENSATION

V. M. Kuzmenko, B. G. Lazaryev, A. I. Sudovtsov, V. I. Melnikov

The temperature dependence of the electrical resistance of Fe, Cu, Lu and Tu layers obtained by deposition of the vapor of the metals on a backing cooled by liquid helium is studied. In all freshly deposited layers a minimum of electrical resistance is observed in the region of 4 to 25° K. The temperature of the minimum is found to depend on the thickness of the metal and on its degree of annealing. As a rule, high temperature annealing results in the disappearance of the resistance minimum in the thicker layers. It is suggested that a new singularity of conductivity electron scattering may exist in strongly distorted metallic lattices.

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USSR

UDC 669.293.017:537.312.62

PAN, V. M., LATYSHEVA, V. I., SUDOVTSOV, A. I., and MEL'NIKOV, V. I.

"A Possible Cause for the High Critical Temperature of the Superconducting Compound $Nb_3Al_{0.8}Ge_{0.2}$"

Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 92-98

Translation: Isothermal cross-sections of a sector of the diagram of phase equilibria of the system niobium-aluminum-germanium are constructed for niobium-rich alloys (up to 27.5 at.% aluminum and germanium) at 1,700 and 1,000°C are constructed. It is demonstrated that at these temperatures the isomorphic compounds Nb_3Al and Nb_3Ge form a continuous series of solid solutions. The form of the area of homogeneity of the G-$Nb_3Al_xGe_{1-x}$ phase is studied. It is demonstrated that in the system Nb_3Al-Nb_3Ge (that is, in the cross-section of the niobium-aluminum-germanium system with constant niobium content 75 at.%), only those alloys which have a germanium concentration of not over 5-7 at.% are single-phase (these concentrations of germanium correspond approximately to the trinary compound with the formula $Nb_3Al_{0.8}Ge_{0.2}$).

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PAN, V. M., et al., Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 92-98

It is also demonstrated that the critical temperature of the β-$Nb_3Al_xGe_{1-x}$ phase increases (apparently according to a parabolic rule) with increasing content of germanium under the condition of retention high (not under stoichiometric, that is, 25 at.%) total concentration of component B (that is, % Al + % Ge). If the total concentration of component B begins to drop and falls below the stoichiometric level, the critical temperature drops sharply.

The form of the area of homogeneity of the β-$Nb_3Al_xGe_{1-x}$ phase determined in this work shows that the highest concentration of germanium at which the stoichiometric composition of the phase (% Al + % Ge $\geq$ 25) is still attained is 5-7 at.%. It is therefore clear that this composition, corresponding to the formula $Nb_3Al_{0.8}Ge_{0.2}$, should and does show the highest critical temperature.

6 figures; 20 biblio. refs.

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USSR

UDC 535.581.3

KOLODEYEV, I. D., KALININ, V. YA., SUDOVTSOV, A. I., SHEVCHENKO, T. G.

"Setup for Studying Cryogenic Electromechanical Instruments and Devices"

Moscow, Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 247-248

Abstract: An experimental device with a metal laboratory cryostat designed for studying superconducting electromechanical devices in liquid helium is described. The arrangement differs from those already known in the apparatus for operation of the investigated instruments and the cryostat in the neck of which there is a container with liquid N_2 acting as a heat shield over a helium bath. The application of this shield has permitted a significant reduction in the heat flux to the coolant and a 3 to fourfold increase in the possible time of the experiment without increasing the liquid helium flow rate. Prolonged operation of the device demonstrated that the germanium photodiodes and optical fiberglass light guides remain reliable for multiple repetitions of the filling of the cryostat with liquid helium and evaporation of it after completion of the experiment. The liquid helium level is signalled electronically by a light indicator. An audio signal is also used for the emergency level. The cryostat characteristics are as follows: helium tank volume 7 liters, volume of helium

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KOLODEYEV, I. D., et al., Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 247-248

admitted to the cryostat 4.5 liters, inside diameter of the helium tank 130 mm, the reservoir for liquid N_2 holds 1.5 liters, and the evaporation of the He in the static mode is 0.45-0.5 liters/hour. A complete section view of the device is included.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

UDC: 621.397

SHUMLYAYEV, V. S., MOROZOV, V. A., SUDRAVSKIY, D. D., and SHABUNIN, A. I.

"Large-Screen Stereo Television"

Moscow, Tekhnika kino i televideniya, No 3, 1972, pp 65-66

Abstract: A description is given of experiments in stereoscopic television on a large screen conducted by the Television Department in the M. A. Bonch-Bruyevich Electrotechnical Institute of Communications in Leningrad. The experimenters used the transmitting part of a two-channel stereo television equipment, with two television light-valve projectors used for image reproduction. At a light flux of up to 2000 lumens, the brightness of the image is high enough for use of the polarization method of separation of image pairs. Specifications of the system, which conform to Government Standard GOST 7845-55, are given together with its block diagram. The authors conclude that this system may be used in various types of training situations, such as operation of aircraft, for lectures in the VUZ schools, and in applied science.

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USSR

UDC 581.19:581:061.6/12(477)

SIDYINA, O. G., Institute of Botany, Academy of Sciences, Ukrainian SSR

"Development of Chlorophyll Investigations at the Institute of Botany, Academy of Sciences Ukrainian SSR

Kiev, Ukrainsk'yy Botanichnyy Zhurnal, Vol 28, No 6, Nov/Dec 71, pp 681-693

Abstract: Investigations concerning the biosynthesis of chlorophyll in plants were initiated at the Institute of Botany, Academy of Sciences Ukrainian SSR by Academician V. M. Lyubimenko. With his work he laid the foundation for and indicated the direction of research activities in the search for the solution of this problem. His discovery of the laws governing the relationship between the chlorophyll content in the leaf, effectiveness of light, and photosynthesis intensity have been of considerable theoretical and practical importance. Studying the transformation processes of pigments in different plants, Lyubimenko came to the conclusion that in some plants a protochlorophyll + a protein is converted into chlorophyll with the help of chlorophyllase, while in others light energy is required, and on the basis of this conclusion formulated his theory of chlorophyll formation. His work with regard to the biosynthesis of chlorophyll in plants was continued by a new generation of researchers working at the Department of Biochemistry founded at the Institute

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SUDYINA, O. G., Ukrainsk'yy Botanichnyy Zhurnal, Vol 28, No 6, Nov/Dec 71, pp 681-693

of Botany in 1958. On the basis of the Lyubimenko conclusions with regard to the biosynthesis of chlorophyll, study of the spectral properties of pigments and their chromatographic distribution on paper and in etiolated plants, the researchers arrived at the following formula of the biosynthesis of chlorophyll: prochlorophyllide + 2H forms chlorophyllide which with the help of chlorophyllase and added phytol is converted into chlorophyll. Researchers at other laboratories using new methods and approaches arrived at similar conclusions. Not yet known, and distributing to all researchers, is how and in what forms protochlorophyll is formed and exists in nature. Further research at the department is dedicated to the solution of this problem, and the problems of the role of chlorophyllase and the intermediate reactions involved in the biosynthesis of chlorophyll. Considerable work is being done also on the decomposition of chlorophyll and the accumulation of carotene in the leaf and fruits of such plants as the tomato, apricot, strawberry, raspberry and cherry at the time of their ripening. A comparative investigation of the physical and chemical properties of chlorophyll protein components in taxonomically different plants is now in progress. This is a difficult and time consuming but also important task, for it may disclose new mysteries of nature.

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USSR

SUDYINA, O. G., Ukrainsk'yy Botanichnyy Zhurnal, Vol 28, No 6, Nov/Deb 71, pp 681-693

Lyubimenko in his time called attention to chlorophyll dissimilarity in the protoplasts of different plants, and emphasized the importance of investigations concerning this problem. However, no facilities for this type of research were then available. It is now being carried out by the method of differential centrifugation.

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USSR

UDC 577.15

KHACHATRYAN, G. S. and SUDZHYAN, Ts. M., Yerevan State Medical Institute, Yerevan

"Activity of Various Forms of Glycogen Synthetase in the Brain Under the Effect of Psychotropic Substances and of Physiological Influences"

Yerevan, Biologicheskiy Zhurnal Armenii, Vol 5, No 8, Aug 72, pp 3-11

Abstract: Earlier research showed that the activity of brain glycogen synthetase is affected by monoaminooxidase (MAO) inhibitors, which produce an antidepressant effect. The effects of functional states of the brain and of the MAO inhibitors iprazid/iproniazid/, transamine, and isoniazid on the glucose-6-phosphate dependent and glucose-6-phosphate independent glycogen synthetase activity in brain tissue (D and I activity, respectively) were studied in experiments on rats. On administration in doses that produced the maximum inhibition of MAO activity, iprazid and isoniazid raised within 4 hrs the D activity without exerting an effect on the I activity, while transamine, which lacks a hydrazine structure, did not alter the glycogen synthetase activity in brain tissue. In 16 hrs both the D and I activity were raised by iprazid and in 10 hrs by isoniazid (apparently iprazid was converted into isoniazid in 6 hrs in rats). In experiments in vitro, iprazid lowered the total glycogen

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USSR

KHACHATRYAN, G. S. and SUDZHYAN, Ts. M., Biologicheskiy Zhurnal Armenii, Vol 15, No 8, Aug 72, pp 3-11

synthetase activity in 30 min, while isoniazid increased it during that time, affecting predominantly the I activity within 15 min and the D activity at the end of 30 min. The results in vitro confirmed the conclusion that iprazid exerts its action over the formation of isoniazid. The over-all glycogen synthetase activity was also increased by transamine in experiments in vitro. Nutritional stimulation and conditioned nutritional stimulation increased principally the I activity, while both the D and I activity were increased by conditioned inhibition. The last indicated that the anabolic type of glycogen metabolism predominated in the functional state in question.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

SUDZHYUTE, D.

UDC 51

"Nonantagonistic Games on a Unit Square With Varying Discontinuity Curves of Game Kernels"

Lit. mat. sb. (Collection of Lithuanian Mathematical Works), 1972, 12, No 3, pp 165-179 (summaries in Lithuanian and English) (from RZh-Matematika, No 3, Mar 73, Abstract No 3V499 from author's abstract)

Translation: The article considers a game on a unit square with kernels possessing certain monotonic properties and properties of boundedness and smoothness, which can be violated on some continuous, strictly monotone curve passing through points (0,0), (1,1). The article investigates the shape of spectra of equilibrium strategies and in particular cases proves the existence of equilibrium situations and indicates how to find them.

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USSR

SUDZHYUTE, D., GORELIK, L. UDC: 518.9

"Some Balanced Pairs of Strategies in Games on a Unit Square"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1971, 11, No 2, 343-350 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V777)

Translation: A nonantagonistic game is considered on a unit square with bounded kernels $K(\xi, \eta)$, $L(\xi, \eta)$, which satisfy the following conditions: 1) the functions $K(\xi, 0)$ and $L(0, \eta)$ are continuous and increase monotonically in the interval $(0,1]$; 2) the functions $K(\xi, 1)$ and $L(1, \eta)$ are continuous and increase monotonically in the interval $[0, 1)$. Conditions are given for the existence of balanced pairs in which the spectra of the distribution functions are contained in the set $\{0,1\}$ (theorems 1-4) expressed in terms of the values of the functions K and L at the corner points of the unit square; the limits $\lim_{\xi \to 0} K(\xi, 0)$, $\lim_{\xi \to 1} K(\xi, 1)$, $\lim_{\eta \to 0} L(0, \eta)$, $\lim_{\eta \to 1} L(1, \eta)$ are given. In the case of existence of these balanced pairs of strategies, their form is indicated. Bibliography of five titles. Authors' abstract.

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USSR

UDC 611.22:611.83.014.477-019

SUDZILOVSKAYA, Ye. F., First Leningrad Medical Institute imeni L. P. Pavlov; Leningrad Scientific Research Neurosurgical Institute imeni A. L. Polenov

"The Pharynx Nerve Structure of Rabbits Subjected to Gravitational Stresses"

Leningrad, Arkhiv Anatomii, Histologii i Embriologii, Vol 62, No 1, Jan 72, pp 95-98

Abstract: The innervation apparatus of the pharynx was studied with 18 rabbits subjected to centrifugation of 10 G for 30 sec per cycle (6-10 cycles). The condition of the animals during centrifugation was checked by the respiration rate and ECG. All rabbits were killed 72 hr after the centrifugation, and the pharynx nerve structure was analyzed. Reactive and in some cases destructive changes were observed in nerve fibers, which were expressed as argentophilia, dyschromia, excessive accumulation of neuroplasm, and fragmentation. The mucous membrane contained thickened nerve bundles with local fragmentation. Among the vascular lesions there were capillary and venous stasis, as well as diapedesis of erythrocytes. An abnormal accumulation of adipose cells around the pharynx glands, blood vessels, and under epithelium were observed. The obtained results are inconclusive and preliminary, and the article omits all experimental details.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002203210016-4

USSR

STAROSEL'SKIY, V. I., SUETINOV, V. I.

UDC 621.373.5

"Formation of a Gate Signal in a Gunn Diode"

Kiev, Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 1051-1052

Abstract: A study was made of the possibility of using a Gunn diode as a gate signal shaper. The schematic of the shaper is presented where the Gunn diode is included in series with the gate oscillograph mixer which is a short circuit line with the wave impedance R ≈ 50 ohms as the diode load. The input signal is a bell-shaped voltage pulse the duration of which at the threshold voltage level of the Gunn diode U_m does not exceed the drift time of the domain T. When $U_{inp} = U_m$, a strong field domain is formed in the gun diode, and the diode current decreases from the threshold value I_m to αI_m. The current pulse is differentiated in the mixer as a result of which a short voltage pulse is generated which is the gate signal. The maximum amplitude of the signal is $U_{sig} = R_m (1 - \alpha)R$, and the duration is defined by the length of the short circuit line and can be decreased to the domain formation time T without decreasing the amplitude. Oscillograms are presented for the electrical processes in the shaper. The gate signal had an amplitude of 320 millivolts and

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a halfwidth of about 0.4 nanoseconds. The signal was obtained on a diode not specially designed for this purpose. If a diode 100 microns long with the parameters U_m = 30 volts, I_m = 200 milliamps and T = 1 nanosecond were used it is possible to expect that the gate signal would have an amplitude of several volts and a halfwidth of about 30 nanoseconds. The input signal of the required amplitude and duration can be formed by an avalanche transistor. The negative voltage blip following the gate signal can be reduced significantly by giving the Gunn diode a trapezoidal shape with expansion from the cathode to the anode. In this case, during the domain drift time the diode current increases smoothly and on disappearance of the domain the current drop is decreased significantly.

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